

## Monocure Universal Container UCI

## SunPoly™ family of Screen Container Inks

### 1. Description

Monocure Universal Container UCI series UV curing screen inks have been specifically formulated for high speed screen printing onto moulded plastic bottles, containers and tubes. They are specially suited to fast, multi colour, inter station curing machines, exhibiting excellent definition at the highest print speeds. The range includes high opacity whites, dense blacks and a full range of high gloss colours.

### 2. Product features\*

- Wide ranging multi substrate adhesion
- Rapid UV cure
- Off line water and product resistance
- Superior intercoat adhesion
- Optimised rheology for high quality definition and no drip through
- Foil blockable

\*Specific application performance data, where available can be provided by your Sun Chemical representative.

### 3. Product Suitability\*

#### 3.1 Applications

Monocure Universal Container UCI series inks are a range of screen printing inks for use on plastic containers. The inks are recommended for use on personal care, industrial and domestic products containers and are not generally suitable for use on containers that contain food.

#### 3.2 Substrates

Monocure Universal Container UCI series inks are recommended for use on polypropylene and polyethylene containers, particularly where tough, product resistant decoration is required. Monocure Universal Container UCI series inks are also suitable for printing on most grades of PET and some grades of PVC container, although they are not suitable for printing onto bi-axially orientated, injection blow moulded PET containers such as those used for carbonated soft drinks.

Monocure Universal Container UCI series inks have been formulated to give excellent adhesion to polyethylene and polypropylene containers, however, untreated polyolefin substrates have an inert surface which does not promote good ink adhesion and requires pre-treatment before printing.

To render the surface of polyolefin substrates ink receptive, and thereby ensure good adhesion, the surface is normally activated by flame treatment. It is recommended that printing is carried out as soon as possible after treatment. Monocure Universal Container UCI series inks are designed to give adhesion and product resistance over a range of treatment levels, but for optimum results a wetting tension of 48 – 58 dynes/cm is recommended. A number of tests exist for measuring surface treatment, the most popular of which are surface tension testing pens.

When printing onto PET substrates, tests have shown flame or corona discharge treatment enhances the adhesion achieved and is therefore recommended for best results.

#### 3.3 Adhesion Promoter

Should some substrates prove unreliable for adhesion, Monocure Adhesion Promoter, 551903 can be added at 2 – 3 %. Once added the inks will remain usable for up to 24 hours, after which one further addition can be made to restore the adhesion promoting properties.



**3.4 Impact Resistance**

Monocure Universal Container UCI series inks have been formulated for use on a wide range of plastic container substrates including PET and PVC materials. However, some grades of PVC and PET combined with poor moulding techniques can lead to containers being moulded in a strained condition. When these containers are printed and filled, it is possible that the impact strength can be reduced to an unacceptable level. Any reduction in impact strength is also related to time and can take up to three months to develop. This phenomenon of stress cracking in the presence of inks is widely recognised and Monocure Universal Container UCI series inks have been formulated to minimise this condition. However, it is essential that normal quality control tests for assessing impact strength are conducted on a printed bottle, thus ensuring any likely problems are identified early before full production commences. Further advice regarding blow moulding techniques, selection of PVC and PET compounds and impact modifiers are readily available from manufacturers of these polymers.

Should there be any doubt about the suitability of Monocure Universal Container UCI series inks for use on a particular container substrate, please contact your local Sun Chemical branch for further advice, but in general VioFlex VFX series UV screen inks are more ideally suited for PVC containers.

**3.5 Product Resistance**

Monocure Universal Container UCI series inks have excellent resistance to water, detergent, oils, alcohols and cosmetics, but are not totally resistant to bleach. If required, additional resistance can be achieved by using Monocure Adhesion Promoter, 551903 at 2 – 3%, with inks remaining usable for up to 24 hours, after which a subsequent addition may be made once to restore the improved resistance properties.

**3.6 Overprinting**

Monocure Universal Container UCI series inks can be superimposed successfully, especially on multi head print lines. On single colour lines, long intervals between printing superimposed layers should be avoided and the containers should not be retreated, as this will lead to poor intercoat adhesion. Intercoat adhesion should be checked under the intended conditions before full production runs are commenced.

**3.7 Foil Blocking**

Monocure Universal Container UCI series inks will accept foil blocking, but care should be taken as this process can be influenced by a number of factors including cure, age of print, etc. Testing of foil blocking is recommended before commencing a production run.

\*Please refer to your local Sun Chemical representative for specific details.

**4. Colour Range**

MONOCURE UNIVERSAL CONTAINER UCI SERIES SUNMATCH BASE COLOURS			
Primrose	UCIY34	Golden Yellow	UCIY54
Orange	UCIO54	Scarlet	UCIR24
Red	UCIR54	Magenta	UCIM50
Violet	UCIV50	Blue	UCIB50
Green	UCIG50	Blending Black	UCIN50
Blending White	UCIW50	Blending Clear	UCIE50
Dense Black	UCIN70	Opaque White	UCIW70
THINNERS AND MODIFIERS			
Thinner	TU04	Adhesion Promoter	551903



#### 4.1 Colour Range

Monocure Universal Container UCI series inks are available in the SunMatch colour range of 9 strong, bright mono-pigmented shades which together with black, white and base form a complete ink blending and mixing system. The SunMatch blending system allows mixing of practically any colour, including Pantone<sup>®\*</sup>, RAL and HKS and is fully compatible with both Formulator and Formulator IDS ink and colour match management systems. Special effects and metallic shades are also available on request.

Should an over print clear be required (SunMatch shade equivalent of C50) the base UCIE50 can be used.

For further information on Pantone<sup>®\*</sup> (and other colour specification systems) or Formulator ink management products, contact your local Sun Chemical branch.

\* Pantone Inc.'s check standard trademark for colour

### 5. General Handling

#### 5.1 Storage and shelf life

Monocure Universal Container UCI series inks should be stored in sealed light safe containers at temperatures between 5 – 30 °C. They have a minimum shelf life of 12 months, but can remain usable for longer periods depending on storage conditions.

For more specific handling advice refer to the Safety Data Sheet.

### 6. Printing Conditions

#### 6.1 Curing

Monocure Universal Container UCI series inks will cure at speeds in excess of 5000 impressions per hour using a conventional 80 watt/cm lamp. Higher prints speeds are possible if curing units are rated at a higher wattage/cm. The spectral output should be in the 300 – 400 nm range, as delivered by medium pressure mercury vapour, metal halide and microwave initiated UV light sources.

Cure speed is affected by a number of factors, including efficiency of the bulbs, the reflectors, the focusing, the colour of the ink and substrate, the container diameter, the filmweight deposited, etc. and should be thoroughly checked before commencing a full production run.

Some opaque colours will inevitably have slower cure speeds, but the addition of base (UCIE50) will improve this and adhesion. For more detailed advice, we recommend contacting your local Sun Chemical branch.

#### 6.2 Screen Stability

Monocure Universal Container UCI series inks will not under normal circumstances cure in the screen. However, it is recommended that the screen is covered during stoppages to avoid dust contamination. Exposure to direct sunlight or strong artificial light sources should be avoided at all times. The optimised rheology of Monocure Universal Container UCI series inks prevents the ink dripping through the screen during stoppages and significantly reduces the number of scrap containers produced at start up.

#### 6.3 Viscosity Reduction

Although structured, Monocure Universal Container UCI series inks do not require the use of screen heaters, although their use may enhance the quality of the print produced, especially on very fine detail work.

Monocure Universal Container UCI series inks are supplied press ready, and do not usually require thinning; however, if deemed necessary, up to 5% Viscosity Modifier TU04 may be added. Excessive additions of TU04 will affect the cure, adhesion and final resistance properties of the cured ink.



## Provisional Technical Data Sheet

**6.4 Printing materials**

High quality stencil materials such as those in the SunCoat range are recommended for best results. Product Data Sheets and detailed specialist advice on choice of emulsions, films and all related stencil products can be obtained from your local Sun Chemical branch. Fine nylon or polyester mesh with a mesh count of 140 – 180 threads/cm and a medium/hard sharp polyurethane squeegee should be used.

**6.5 Coverage**

Up to 80 m<sup>2</sup>/kg may be expected, but coverage is dependant on a number of printing factors including, mesh choice, stencil thickness, squeegee, etc.

**6.6 Washing up**

Commercial screen cleaners, such as those in the 'SunCoat' range are recommended for best results. Product Data Sheets and advice on the SunCoat range of screenwashes is available from your local Sun Chemical branch.

**7. End-use safety****7.1 Handling**

Monocure Universal Container UCI series inks should be used in accordance with normal standards of industrial hygiene. Please refer to the information provided on product labels and relevant Safety Data Sheets. For more details on handling of UV materials please refer to EuPIA's latest document – 'Guidelines for Printers on the Safe Use of Energy Curing Printing Inks and Related Products' ([www.eupia.org](http://www.eupia.org)).

**7.2 Food Packaging**

Sun Chemical UV curing screen products are not suitable for direct food contact (i.e. where there is intentional contact between the print and the foodstuff).

Monocure Universal Container UCI series inks are not intended to be used in applications where low migration is an end-use requirement. There are materials within the ink formulation which have the potential to migrate under certain conditions. Monocure Universal Container UCI screen inks have not been designed for printing food contact materials and therefore are not likely to be acceptable for use in primary food packaging applications without an appropriate migration barrier. If a printed label, sleeve or tag etc. forms part of a food package, it is the responsibility of the converter and food packer to ensure that the product is suitable for this use and that any migration does not exceed any permitted regulatory limitations.

For end uses where low migration is a requirement, Monocure Low Migration Container LMC series inks are recommended.

**7.3 Toys (Safety) Regulations EN71-3: 1995**

These inks have been formulated to exclude heavy metal based pigments. However, inks are supplied without warranty due to risk of contamination throughout the many processing steps from raw materials to finished toy. To ensure conformity analysis is therefore essential. The inks may be analysed or alternatively the finished toy (note however that the legislative limits apply to the toy itself and not to the wet ink as supplied). Please refer to our company statement concerning inks for toys.

**8. Technical Assistance / Contacts**

For further information, please contact your local Sun Chemical team.

Our Products are intended for sale to professional users. The information herein is general information designed to assist customers in determining the suitability of our products for their applications. All recommendations are made without guarantee, since the application and conditions of use are beyond our control. We recommend that customers satisfy themselves that each product meets their requirements in all respects before commencing a print run. There is no implied warranty of merchantability or fitness for purpose of the product or products described herein. In no event shall Sun Chemical be liable for damages of any nature arising out of the use or reliance upon this information. Modifications of the product for reasons of improvements might be made without further notice.

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